E-SAFE® II Provides Power Switching at High Amperage and High Ambient Temperatures

The patent pending E-SAFE® II hybrid power switch from Watlow® provides reliable and accurate power switching up to 35 amperes at 70°C (158°F). This mercury-free product is specifically designed to operate in the higher ambient temperatures of foodservice applications.

The use of mercury relays is being eliminated due to many regulations affecting its use in the United States and around the world. When replacing mercury-relay switches, the E-SAFE II is the best performing product at the most economical price. Because of the product's unique design, there is no need to purchase costly heat sinks used with traditional solid state relays (SSRs). In addition, this is a three-phase device, so there is no need to wire multiple command signals. With a switching life of millions of cycles and an ambient rating of 70°C (158°F), with no heat sink required, this product is more superior than typical SSRs.

The E-SAFE II hybrid power switch provides foodservice operators with longer contact life and higher performance than typical mechanical contactors used in equipment. By using Watlow's patent pending NO-ARC technology, the E-SAFE II can switch millions of cycles increasing the life of the product with decreased noise and increased temperature accuracy. E-SAFE II's inherent ability to operate at fast cycle time provides a nice complimentary product for a time proportioning (PID) controller.

Not only are you faced with mercury phase outs in order to compete in the international market, you must consider RoHS compliancy. E-SAFE II, while being mercury free, is also RoHS compliant by design, CE approved and C-UL®/UL® recognized. The reliability of the product is protected by a 24 month warranty.

Applications

- Griddles
- Convection ovens
- Steamers
- Toaster ovens
- Fryers
- Conveyor ovens
- Holding cabinets
- Dishwashers/warewashers

Features and Benefits

Mercury-free hybrid power switch
- Improves safety by eliminating risk of toxic metals in conjunction with food
- Adheres to federal and state regulations of phase out and banning programs of mercury

High ambient temperature rating of 70°C (158°F)
- Specifically designed to operate in the higher ambient temperatures of foodservice applications

NO-ARC technology
- Combines hybrid solid state technology and mechanical output
- Allows faster cycling times
- Delivers more precise temperature control, saves energy, extends heater life and creates a lower lifetime cost

Compact and touch-safe package
- Fits in shallow foodservice cabinets
- Allows for horizontal or vertical mounting installations
- Increases safety for installer/operator
- Uses Ultem® enclosure material with an HB rating of 170°C (338°F) and a UL® flame retardant rating of 94 5VA

RoHS compliant by design
- Specifically designed to meet Asian and European requirements

LED indicator light
- Indicates command signal presence from controller
- Assists in trouble shooting

Agency approvals
- UL® recognition, C-UL® and CE
- WEEE compliant

Multiple U.S. and International Patents Pending

Watlow® is a registered trademark of Watlow Electric Manufacturing Company.
UL® and C-UL® are registered trademarks of Underwriter's Laboratories, Inc.
Ultem® is a registered trademark of General Electric Company.

WATLOW
Better Thermal Solutions...*Faster*

WIN-ESRII-0608

© 2007, 2008 Watlow Electric Manufacturing Company

Specifications

Output voltage
- 200/240V~(ac) +10/-15%, 50/60Hz, 100/120V~(ac) +10/-15%, 50/60Hz

Output amperage
- Up to 35A single, dual and three-phase

Operating environment
- 0 to 70°C (32 to 158°F) operating temperature
- 0 to 90% RH, non-condensing
- Operational life: four million switching cycles
- Installation category III, pollution degree 2

Control mode
- NO-ARC hybrid contactor

Input command signal
- 3 to 32V⎓(dc), 24V~(ac) +20/-20%, off state ≤2.7V⎓(dc)
- 100 to 240V~(ac) +10/-15%, [85 to 264V~(ac)]

Note: On the 100 to 240V~(ac) input models, do not use a RC snubber on the E-SAFE II relay input or the temperature control command signal output.

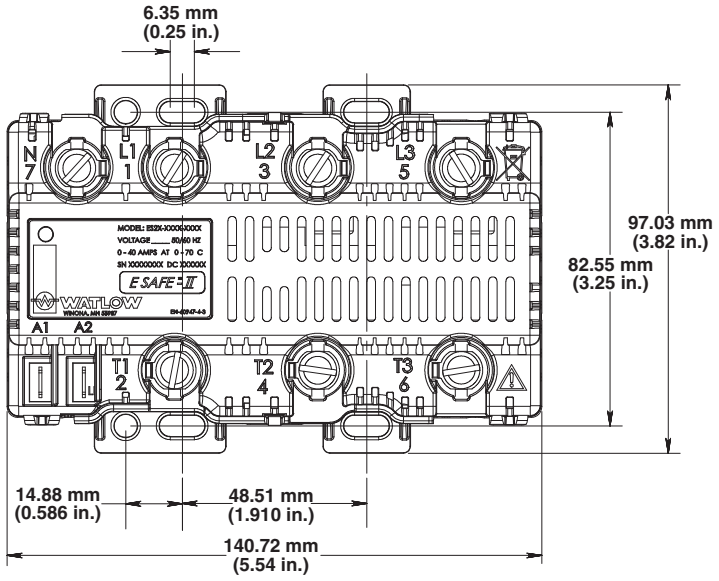
LED indicator light
- Built in LED assists in trouble shooting; LED "off" indicates relay(s) are open, LED "on" indicates relay(s) are closed.

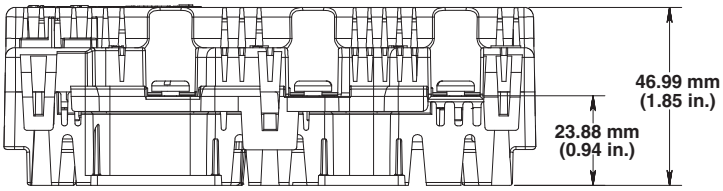
Input command signal terminals
- ¼ in. fast on appliance

Line and load terminals
- No. 10 screw will accept ring or spade, 6.35 mm (¼ in.) x 10-32

Mounting
- Back panel mount, horizontal or vertical mounting options

Dimensional Drawings





Ordering Information

E S 2 - 0 - 0

E-SAFE II = Hybrid Power Switch

Number of Poles
1 = 1 pole
2 = 2 poles controlled
3 = 3 poles controlled

Load Voltage
1 = 100 to 120V~(ac)
2 = 200 to 240V~(ac)
3 = 230/277V~(ac) [400/480V~(ac) with wye/star, neutral connected to center required]

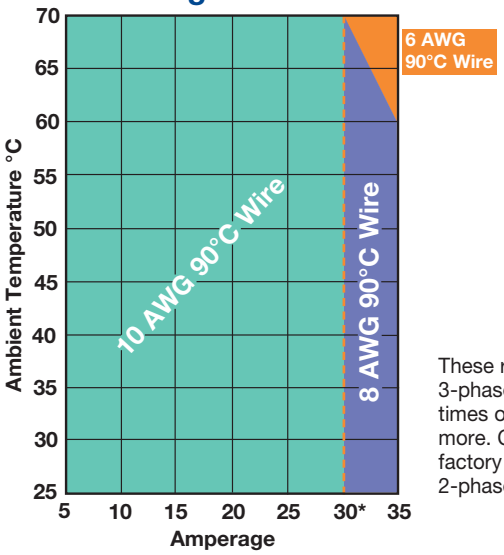
Command Signal Voltage
LV = Low voltage 3 to 24V⎓(dc) or 24V~(ac)
HV = High voltage 100 to 240V~(ac) +10/-15%, [85 to 264V~(ac)]

Future Option

Future Option

Custom Parameters
000 = Standard product
Any three letters or numbers = cosmetic options

Product Rating Curve



These ratings apply to 3-phase units with cycle times of 30 seconds or more. Consult the factory for 1- and 2-phase unit ratings.

UL® Conditions of Acceptability
Applications must be tested as described below for specific wire insulation or specific wire gauge sizes. Tests shall be performed in the end application under worst case operating conditions.

Test Procedure
A. Monitor temperatures of terminals, using thermocouples between the ring terminal and connectors L1, L2 or L3. The temperature must not exceed 95°C (203°F).
B. Monitor temperatures of wire insulation, using a thermocouple located three inches from the connector. The temperature must not exceed the insulation rating of the wire.

*30A is maximum rating when operating above 240V~(ac).

Warning: Thermocouples attached to terminals will be at load voltage potential, measurements need to be taken with isolated equipment or isolate the sensor from terminal with suitable insulation.

To be automatically connected to the nearest North American Technical Sales Office:

1-800-WATLOW2 • www.watlow.com • info@watlow.com

International Technical Sales Offices: Australia, +61-3-9335-6449 • **China,** +86-21-3950-9510 • **France,** +33 (0) 3073-2425 • **Germany,** +49 (0) 7253-9400-0 • **Italy,** +39 (0) 2 458-8841 • **Japan,** +81-3-3518-6630 • **Korea,** +82-2-575-9804 • **Malaysia,** +60-3-7980-7741 • **Mexico,** +52 (442) 217-6235 • **Shanghai,** +86-21-3950-9504 • **Singapore,** +65-6777-1266 • **Spain,** +34 91 675 1292 • **Sweden,** +46 35-27-11-66 • **Taiwan,** +886-7-288-5168 • **United Kingdom,** +44 (0) 115-964-0777